CLAIMS:

1.   A digital signal processing system for executing a digital signal processing applications program comprising:

a host computer for developing applications programs in conjunction with a target DSP;

a target DSP computer having an operating system and arranged to communicate with said host computer;

means for inputting to the host computer parameters relevant to said applications program; and

means for automatically configuring the target DSP's operating system in different manners depending upon said parameters and in order to optimize performance of said target.

2.   The system of claim 1 wherein said host computer comprises a graphical user interface for interacting with a developer and accepting said parameters to be input.

3.   The system of claim 2 wherein said parameters comprise a period of various periodic functions, and further comprising means for configuring the operating system to only execute at the minimum required frequency based upon said periods.

4.   In a computer system having a host computer and a target DSP, a method of permitting a developer of an application program to automatically optimize performance, said applications program requiring a first set of parameters to define, said target DSP

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having an operating system with a second set of parameters, the method comprising;

accepting said first set of parameters from the developer;

automatically determining, based upon said first set of parameters, optimization values for said second set of parameters; and

configuring said second set of parameters with said optimized values.

5. A method of performing real-time analysis of a target DSP chip, said target DSP chip operating in conjunction with a host computer, the method comprising:

storing, on the host computer, instructions for interpreting and processing statistics to be monitored;

capturing, without any further processing, statistics regarding data to be monitored at the target DSP; and

transferring the statistics to the host, and processing and interpreting the statistics at the host.

6. A method of ascertaining wait times in a real-time system on a target DSP chip, said method comprising:

maintaining, on the target DSP chip, statistics based upon wait times for numerous real-time tasks, without storing or transmitting the wait time each time a real time task executes; and

utilizing said statistics at a host to ascertain if said

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system is properly performing in real-time.

7. A method of performing real-time analysis in a computer system, said computer system comprising a host computer and a target DSP computer, said method comprising:

ascertaining, at said host computer, parameters of an application program; and

in response to said step of ascertaining, automatically reconfiguring operating parameters of said target DSP computer so that time and space intrusion caused by real-time analysis of said target DSP is minimized.

8. A method of performing real-time analysis in a computer system, said computer system comprising a host and a target DSP, said method comprising:

inputting, via a graphical user interface, information regarding an application program, and

configuring, in response to said step of inputting, said target DSP to capture real-time analysis data during execution of said applications program on said target DSP with minimal intrusion of time and space on said target.

9. A method of obtaining real-time analysis data relating to a target DSP, said target DSP being arranged to communicate with a host computer, said method comprising:

maintaining at the target DSP a count, a sum and a

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maximum value related to a parameter; and

utilizing said count, sum and maximum value to perform real-time analysis on the host.

5   10.   The method of claim 9 wherein said parameter is interrupt latency.

11.   The method of claim 9 wherein said parameter is CPU load.

10   12.   The method of claim 9 wherein said parameter is interrupt jitter.

13.   The method of claim 9 wherein said parameter is number of times a thread is executed.

15   14.   The method of claim 9 wherein said parameter is wait time.

15.   The method of claim 9 wherein said parameter is amount of
20   data through a data stream.

16.   Apparatus for performing real-time analysis of a target DSP, said target DSP being arranged to communicate with a host computer, said apparatus comprising:

25   means on said target for counting a number of occurrences of a predetermined event, for measuring a maximum value associated

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with said predetermined event, and for transmitting said number of events and said maximum value to the host; and

means resident at said host for extracting real-time analysis data from any number of events and said maximum value.

17. A method of ascertaining whether or not real-time parameters are within required bounds, said method comprising the steps of:

accumulating, on a target DSP, at least two statistics related to said parameter;

transmitting said statistics to a host; and

utilizing said statistics at said host to ascertain whether said real-time parameters are within required bounds.

18. The method of claim 17 wherein said statistics include a count, a maximum, and a sum.

19. The method of claim 17 wherein said parameters include one or more of the following: CPU load, interrupt jitter, interrupt latency, wait time, data through a data stream, number of times a thread is executed, and maximum busy period.

20. The system of claim 1 further comprising means for measuring elapsed time during execution of said applications program.

21. The system of claim 20 wherein said means for measuring comprises two distinct storage means, and wherein concatenation of values stored in said storage means is representative of elapsed time.

22. The method of Claim 9 wherein said parameter is maximum CPU busy period.

23. A method of implementing functionality of an applications programming interface (API), said functionality being executed on a target DSP, said functionality being executed by one of a plurality of algorithms, said target DSP being arranged to communicate with a host computer, said method comprising:

accepting, at said host computer, parameters relevant to said applications program to execute on said target DSP;

analyzing said parameters at said host; and

selecting, in response to said step of analyzing, one of said algorithms to execute said functionality on said target.

24. The method of Claim 23 wherein said algorithms measure elapsed time.

25. The method of claim 24 wherein said algorithms define a period for executing periodic functions.

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